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•	Locality Number	Location Howard Pass Quadrangle,	Bouth end of high bank shows the follows with dipping	Sample description 34ATr207AShale, black, weathered papery. Practure	Petrographic and mineralogic data 6-ATr207AChiefly composed of closely packed red
		68°42'25" N., 158°27'45"	units from south to north: (1) talus of fine-grained	surface has satiny luster similar to attrital coal.	organic material with fibrous aspect as viewed
•		W. Kiligva River; high bank, west side, 1.3 mi.	spherical (cannonball) calcareous concretions, 10 ft;	Bedding is smoothly undulating in scale of 2-4 inches. Contains abundant pyrite in lenses \(\frac{1}{2} \times 2 \) mm.	in this section on the smitter light. Cell of structure was it deserved. Milor emounts of
;		below junction of Rolling	(2) oil shale, weathered dark-gray, crumpled, and	Minute gypsum crystals coat weathered bedding planes. Obscure plant fragments and prints of fish scales	quartz sour in lesses with the pyrite. X-ray
		Pin Creek. (Same locality as assay No. 4,	sheared shale weathered to clay, 10 ft;(4) clay	are present.	analyses show less than 10 percent clay that consists mainly of illite with lesser amounts of
		p. D132, Tailleur, 1964.)	shale, rusty- and gray-colored, interlayered with - clay, 5 ft and (5) clay shale, weathered red, 30 ft.	64ATr207BShale, black, weathered papery. Is similar to 64ATr207A, but contains more iron.	kaulinite and mixed-layer illite-montmorillonite.
			Strongly deformed mudstone, variculored chert, and	oxides on weathered joints and bedding planes.	seemingly more altered in comparison with those
			dark brownish-gray, thinly laminated limestone also are exposed along bank.	Contains a few concretions of calcite.	in 64ATr207A. The calcite concretions consist of phosphatic fish bones and coprolites surrounded
» ~ '			Tentatively considered part of a concretion-		by and partly replaced by calcite. Quartz and
<i>§</i> .			bearing wacke assemblage of presumably Late Jurassic or Earliest Cretaceous age.		pyrite are more abundant than in 64ATr207A. Contains about 25 percent clay by X-ray analysis
•			Sample 44ATr207A from 1-ft layer at top of oil		made up of iMite, kaolinite, and mixed-layer
		7	Sample 64ATr2F/7B from 1-ft layer in lower part		illite-montmorillonite. The clay is not evident in thin sections.
í			of oil shale zone.		
:	13	Howard Pass Quadrangle,	Bank consists of outcrop and talus chiefly of vari-	64ATr208Shale, black, weathered papery.	64ATr208Closely packed red organic material
! !-		68°39'30" N., 158°27'	colored chert. A zone about 5 ft thick of black,	Practure surface is fairly_lustrous: rock	with fibrous aspect make up the rock and account
· · · · · · · · · · · · · · · · · · ·	-	45" W. High bank at edge of terrace on east	papery to bookish weathering oil shale is partly exposed at and below the lip of the southern end of	verges on impure coal. Bedding is unquiatory on scale of inches.	for its fissility. Bedding distorted on small scale from slumping or adjustment to compaction.
	,	side of Kiligwa River	the bank. Rubble traces about 100 yards to the east		Pyrite not observed and other visible minerals
		about 2 mi. above junction of Rolling Pin	consist of similar oil shale associated with chert and light greenish-gray-weathering wacke. Other		very sparse.
		Creek. (Approximately	outcrops of oil shale were observed on adjoining		
; ; ;		No. 3, p. D132, Tailleur,	bluffs in 1951. The association of varicolored cherts and concretion		
		1964,)	bearing wacke suggests correlation with the same sequence as at locality 11.		
; ; ,		·	Sample 64ATr208 from 5-ft oil shale zone.		
*	14	Eoward Pass Quadrangle, 68°40'05" H., 157° 33'	Talus and outcrops of northwest-dipping rocks indicate more than 20 ft of mafic igneous rock structurally	64ATr20)ATasmanite, an organic-rich rock made up almost entirely of sporelike disseminules of	64ATr209ARock is a solid mass of compacted spore-
•		45" W. South of Monument	above more than 50 ft of red chert and cherty mad-	Tasmanites. The rock is brownish-gray with	Tasmanites, a problematic type of planktonic
-		Ridge, 12 mi. east of Cutaway Creek. Cutbank on	stone. A 1-ft bed of tasmanite projects through chert talus.	is very tough and hard to break. This and other	alga. The compressed disseminules are discoidal, about 400 microns in diameter. The sporelike
		south end of curved hill	These rocks are mapped as part of an unnamed	tasmanite samples from Alaska yield much more oil	bodies appear grayish yellow in reflected light
,		on north side of small tributary to Cutaway Creek	cherty unit stratigraphically between the Okpikruak Formation (Early Cretaceous) and the Lisburne Group	by distillation than any samples reported from Tasmania.	but a few are brownish red. The organic matter composing them is anisotropic throughout (strain
,		(Same locality as assay	(Mississippian) with mafic sills. The assemblage is	64ATr209BTasmanite, dark gray, with a bluish	unisotropism), independent of the individual
,		No. 2, p. Dl32, Tailleur,	the same as that present at locality 12 (Assay No. 1, p. D132, Tailleur, 1964) and is extensively overthrust	are irregularly spotted with iros stained gypsum.	sporelike bodies. No clay is evident. Quartz fills a few partly compacted sporelike bodies
			in the region.	Contains lenses 1 x 4 inches of lighter colored	and several are filled with barite. Tiny twinned
			Sample 64ATr209A from upper half of tasmanite bed. Sample 64ATr209B from lower half of tasmanite bed.	quartz-rich material.	plagioclase grains appear to be interstitial to the disseminules. Material of this kind was
					described by White (1929, p. 841-848)
r					64ATr209BGuartz-rich lenses include partly compacted disseminules of Tasmanites lined with
					fibrous quartz, evidently deposited before much
•					if any compression had taken place. Remaining cavities were subsequently filled with finely
					crystalline spherulitic quartz. Barite fills
	·				some of the disaeminules. Relatively low oil yield (88 gal. per ton) may reflect relative
	16	Howard Pass Quadrangle,		64ATr210Tasmanite, bluish gray with tawny gray	abundance of quartz or other mineral matter. 64ATr210Similar to both 64ATr209A and B, but
. ,		68°41'30" N., 157°17'	The middle part of the cut exposes strongly-sheared dark-colored gray-weathering shale that contains	weathered surfaces. Contains both lenses and	contains minute semiopaque stringers of iron
		40" W. Cula Creek just	gouge layers, zones of hard, ferruginous and cherty	numerous scattered silica-filled Tasmanites disseminules.	oxide. No clay minerals evident. Relatively low oil yield (75 gal. per ton) may reflect
		terrain, low cutbank	layers, flaky, organic-rich shale, and blocks of tasmanite. At the north end of the cut is a block of		presence of mineral matter, or local metamorphic
		(Same locality as assay	contorted varicolored chert and float of the Shublik		changes.
•		No. 5, p. D132, Tailleur,	Formation (Triassic); at the south end of the cut is mudstone comparable to that in the Fortress Mountain		
		1964).	Formation (Early Cretaceous). Rocks included in more than one assemblage probably		
			have been mixed tectonically here and originally the		
			tasmanite was likely to have been part of the assemblag present at localities 12 and 14.		
,			Sample 64ATr210 from apparently detached block		
j	,		1 ft thick near creek level in north third of the cut,		
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	19	Howard Pass Quadrangle, 68°37'40" N., 156°42'	Section of south-dipping rocks along low cutbank shows from top: (1) clay, weathered red, more than 15 ft;	64A1r305BShale, dark gray, with gypsum and iron . and manganese oxides on weathered bedding planes.	64ATr305B Ground mass consists of red organic
			op' (1) chartered red, more, with 1) 10,		material with fibrous aspect containing some
r,		00" W. South side of Lis-	(2) black, woody-appearing organic shale that weathers	Is very hard and forms large platy blocks. Lamina-	calcite grains, alternating with layers and
		00" W. South side of Lis- burne Ridge, 2. 8 mi. east of Hardway Creek; low cut-	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by	Is very hard and forms large platy blocks. Lamina- ted with half-millimeter layers of organic-rich shale alternating with calcite.	
		burne Ridge, 2.8 mi. east of Hardway Creek; low cut- bank on south side of	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with	ted with half-millimeter layers of organic-rich shale alternating with calcite. 64ATr305CShale, black, weathered papery to platy	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seen in thin section.
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		burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur,	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed <u>Inoceramus</u> shells?) and abundant belemmites near middle; (3) platy oil shale, weathered brown, very finely strati-	ted with half-millimeter layers of organic-rich shale alternating with calcite. 64ATr305CShale, black, weathered papery to platy in 1-mm laminae. Weathered begins planes dusted with iron and manganese oxides. Contains concretions as large as 15 mm in diameter of calcite and	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite.
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	21.	burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" N., 153°28' 30" W. Middle Fork of	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed Inoceracias shells?) and abundant beleminites near middle; (3) platy oil shale, weathered brown, very finely stratified, 5 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod of. Otapiria and Inoceracias lucifer (R. W. Imlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Furnation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik at the few places it has been recognized previously. However, the apparently undisturbed association of oil shale with chert and lutitic rocks bearing a fauna younger (Early? Jurassic, R. W. Imlay, written communications, 1964, 1965) than that of the Shublik indicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 64ATT305B from unit 3 above. Sample 64ATT305B, from unit 3 above. Sample 64ATT305B, from unit 3 above. Poorly exposed unit consists of deformed midstone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of	ted with half-millimeter layers of organic-rich shale alternating with calcite. 64ATT305CShale, black, weathered papery to platy in 1-mm laminae. Weathered begins, clanes dusted with iron and manganese exides. Contains concretions as large as 15 mm in diameter of calcite and fish bones.	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr305COrganic matter similar to that in 64ATr305B. Some of the thin plates contain no carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamina and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the P2Op in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent diay by X-ray analysis but clay not evident in thin section.
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	21	burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed Inoceranus shells?) and abundant belemnites near middle; (3) platy oil shale, weathered brown, very finely stratified, 3 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod cf. Otapiria and Inoceranus lucifer (R. W. Imlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik at the few places it has been recognized previously. However, the apparently undisturbed association of oil shale with chert and lutitic rocks bearing a fauna younger (Early? Jurassic, R. W. Imlay, written communications, 1964, 1965) than that of the Shublik indicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 64ATr305B from unit 3 above. Sample 64ATr305B from unit 3 above. Sample 64ATr305B from unit 3 above. Poorly exposed unit consists of deformed madstone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing wacks. A block of arenaceous limestone exposed	ted with half-millimeter layers of organic-rich shale alternating with calcite. 64ATr305CShale, black, weathered papery to platy in 1-mm laminae. Weathered became, planes dusted with iron and manganese exides. Contains concretions as large as 15 mm in diameter of calcite and fish bones. 64APa215Claystone, shaly, black. Breaks into irregular pieces rather than flakes. Is slightly	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seem in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr305COrganic matter similar to that in 64ATr305B. Some of the thin plates contain no carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamina and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the P2On in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent clay by X-ray analysis but clay not evident in thin section. 64APa213E5 this section available. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 60 percent
		burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. D132, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side.	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed Inoceranus shells?) and abundant belemnites near middle; (5) platy oil shale, weathered brown, very finely stratified, 5 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod cf. Otapiria and Inoceranus lucifer (R. W. Imlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik at the fer places it has been recognized previously. However, the apparently undisturbed association of oil shale with chert and lutitic rocks bearing a fauna younger (Early? Jurassic, R. W. Imlay, written communications, 1964, 1%5) than that of the full indicates a hitherto unrecognized supra-Shublik indicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 64ATT505B from unit 3 above. Sample 64ATT505C, from 3-ft oil shale zone in unit 2 above. Poorly exposed unit consists of deformed madstone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing wacks. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by a mid slump when seen in 1964. This sequence is somewhat similar to that at locality 11. Sample 64APa215 from organic-rich shale.	ted with half-millimeter layers of organic-rich ahale alternating with calcite. 6AATr305CShale, black, weathered papery to platy in 1-mm laminae. Weathered begins, lanes dusted with iron and manganese exides. Contains concretions as large as 15 mm in diameter of calcite and fish bones. 6AAPa215Claystone, shaly, black. Breaks into irregular pieces rather than flakes. Is slightly iron stained.	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr305COrganic matter similar to that in 64ATr305COrganic matter similar to that in carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamina and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the P2O0 in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent dlay by X-ray analysis but clay not evident in thin section. 64APa215Eo thin section available. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 60 percent illite.
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		burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55'	(2) black, voody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed Inoceranus shells?) and abundant belemnites near middle; (3) platy oil shale, weathered brown, very finely stratified, 3 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod cf. Otapiria and Inoceranus lucifor (R. W. Imlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik Formation and it has been included with the Shublik at the few places it has been recognized association of oil shale with chert and lutific rocks bearing a fauna younger (Early? Jurassic, R. W. Imlay, written communications, 1964, 1965) than that of the Shublik indicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 64ATr305B from unit 3 above. Sample 64ATr305B from unit 3 above. Poorly exposed unit consists of deformed madatone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing wacks. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by a mid alump when seen in 1964. This sequence is somewhat similar to that at locality 11. Sample 64APa215 from organic-rich shale. Outcrops show steeply-dipping contorted varicolored chert. A bed of oil shale 1 ft thick projects through	SAAPa215Claystone, shaly, black. Breaks into irregular pieces rather than flakes. Is slightly iron stained. Chapa208Shale or impure concended coal, black. Bedding is apparent on veathered surface and	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr305COrganic matter similar to that in 64ATr305E. Some of the thin plates contain no carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamina and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the F2Op in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent day by X-ray analysis but clay not evident in thin section. 64APa215E5 this section available. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 60 percent illite.
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		burne Ridge, 2. 8 mi. east of Hardway Creek; low cut- bank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed Inoceracias sheller) and abundant belemites near middle; (3) platy oil shale, weathered brown, very finely stratified, 3 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod of. Otapiria and Inoceracias lucifer (R. W. Ialay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Firmation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik at the fer places it has been recognized previously. However, the apparently undisturbed association of oil shale with chert and lutitic rocks bearing a fauna younger (Early? Jurassic, R. W. Inlay, written communications, 1964, 1965) than that of the Shublik indicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 64ATT505B from unit 3 above. Sample 64ATT505B from unit 3 above. Sample 64ATT505B from unit 3 above. Poorly exposed unit consists of deformed madstone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing wache. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by a mud alump when seen in 1964. This sequence is somewhat similar to that at locality 11. Sample 64APa215 from organic-rich shale. Outcrops show steeply-dipping contorted varicalored chert. A bed of oil shale about 50 ft thick. These rocks have been considered part of the	6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter coal, black. 6AAPa208Shale or impure : momenter coal, black.	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not-seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr305COrganic matter similar to that in 64ATr305COrganic matter similar to that in carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamins and grains that distort bedding of organic material. Pish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the P2On in the chemical analysis (table 5). Barite also occurs as isolated crystals in the shale. Contains about 25 percent day by X-ray analysis but clay not evident in thin section. 64APa215Do this section available. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 60 percent illite. 64APa206Consists of highly layered opaque black organic matter with scattered angular quartr grains. Be fibrous organic material evident. X-ray analysis shows jarosite out it
		burne Ridge, 2. 8 mi. east of Hardway Creek; low cut- bank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed <u>Faocermans</u> shells?) and abundant belemites near middle; (3) platy oil shale, weathered brown, very finely stratified, 5 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod cf. <u>Otapiria</u> and <u>Inocermans lucifer</u> (R. W. Inlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik at the few places it has been included with the Shublik at the few places it has been included association of oil shale with chert and lutitic rocks bearing a fauna younger (Early? Jurassic, R. W. Imlay, written communications, 1964, 1965) than that of the [4] Shublik indicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 64AT3058 from unit 3 above. Sample 64AT3058 from unit 3 above. Sample 64AT3056, from 3-ft oil shale zone in unit 2 above. Poorly exposed unit consists of deformed madatone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing wacks. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by a mad alump then seen in 1964. This sequence is somewhat similar to that at locality II. Sample 64APa215 from organic-rich shale. Outcrops show steeply-dipping contorted varicolored chert. A bed of bil shale I ft thick projects through talus near the aiddle of the bank, and apparently is within a zone of shale about 50 ft thick. These rocks have been considered part of the Tiglukpuk Formation (Patton and Taill	6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter coal, black. 6AAPa208Shale or impure : momenter coal, black.	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not-seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr305COrganic matter similar to that in 64ATr305COrganic matter similar to that in carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamins and grains that distort bedding of organic material. Pish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the P2On in the chemical analysis (table 5). Barite also occurs as isolated crystals in the shale. Contains about 25 percent day by X-ray analysis but clay not evident in thin section. 64APa215Do this section available. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 60 percent illite. 64APa206Consists of highly layered opaque black organic matter with scattered angular quartr grains. Be fibrous organic material evident. X-ray analysis shows jarosite out it
		burne Ridge, 2. 8 mi. east of Hardway Creek; low cut- bank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of plack, calcareous oil shale with laminae of prismatic calcite (crushed Inocornams shellef) and abundant belemintes near middle; (3) platy oil shale, weathered brown, very finely stratified, 3 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutie; contains pelecypod cf. Otapiria and Inocernams lucifer (R. W. Inlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik formation and it has been included with the Shublik formation and it has been recognized previously. However, the apparently undisturbed association of oil shale with chert and lutitic rocks bearing a fauna younger (Early? Jurassic, R. W. Inlay, written communications, 1964, 1:65) than that of the Shublik indicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 6hATr305B from unit 3 above. Sample 6hATr305C, from 3-ft oil shale zone in unit 2 above. Poorly exposed unit consists of deformed midstone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing vacks. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by a mid alump when seen in 1964. This sequence is somewhat similar to that at locality 11. Sample 6hAPa215 from organic-rich shale. Outcrops abov steeply-dipping contorted varicolored chert. A bed of oil shale 1 ft thick projects through talus near the middle of the bank, and apparently is within a zone of shale about 50 ft thick. These rocks have been considered part of the Tiglukpuk Formation (Patton and Tailleu	6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter coal, black. 6AAPa208Shale or impure : momenter coal, black.	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not-seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr305COrganic matter similar to that in 64ATr305COrganic matter similar to that in carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamins and grains that distort bedding of organic material. Pish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the P2On in the chemical analysis (table 5). Barite also occurs as isolated crystals in the shale. Contains about 25 percent day by X-ray analysis but clay not evident in thin section. 64APa215Do this section available. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 60 percent illite. 64APa206Consists of highly layered opaque black organic matter with scattered angular quartr grains. Be fibrous organic material evident. X-ray analysis shows jarosite out it
		burne Ridge, 2. 8 mi. east of Hardway Creek; low cut- bank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.5-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed Inocerans shells?) and abundant belemites near middle; (3) platy oil shale, weathered brown, very finely stratified, 5 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calciluttie; contains pelecypod cf. Otapiria and Inocerans lucifor (R. W. Imlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calciluttie of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik Formation and it has been recognized previously. However, the apparently undisturbed association of oil shale with chert and lutitic rocks bearing a fsuna younger (Early? Jurassic, R. W. Imlay, written communications, 1964, 1:65) than that of the Shublik stratigruphic unit. Sample 6hATr305B from unit 3 above. Sample 6hATr305C, from 3-ft oil shale zone in unit 2 above. Foorly exposed unit consists of deformed madstone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing wacks. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by a mad alump when seen in 1964. This sequence is somewhat similar to that at locality 11. Sample 6hAPa215 from pryshic-rich shale. Outcrops show steeply-dipping contorted varicolored chert. I bed of oil shale 1 ft thick projects through talus near the middle of the bank, and apparently is within a zone of shale about 50 ft thick. These rocks have been considered part of the Tiglukpuk Formation (Patton and Tailleur, 1964, p. 439-440) but direct evidence of their position within iid-Cretaceous to post-Trinssic stra	6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter coal, black. 6AAPa208Shale or impure : momenter coal, black.	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not-seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr305COrganic matter similar to that in 64ATr305COrganic matter similar to that in carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamins and grains that distort bedding of organic material. Pish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the P2On in the chemical analysis (table 5). Barite also occurs as isolated crystals in the shale. Contains about 25 percent day by X-ray analysis but clay not evident in thin section. 64APa215Do this section available. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 60 percent illite. 64APa206Consists of highly layered opaque black organic matter with scattered angular quartr grains. Be fibrous organic material evident. X-ray analysis shows jarosite out it
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	25	burne Ridge, 2. 8 mi. east of Hardway Creek; low cut- bank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank	(2) black, wordy-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick some of platy, calcareous oil shale with leminae of prismatic calcite (crushed Inocerums shells?) and abundant belemites near middle; (3) platy oil shale, weathered brown, very finely stratified, 3 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod cf. Otapiria and Inocerums lucifer (R. W. Intey, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik formation and it has been included with the Shublik at the fer places it has been recognized previously. However, the apparently undisturbed association of oil shale with chert and lutitic rocks bearing a fauna younger (Early) Jurnasic, R. W. Inlay, written communications, 1964, 1965) than that of the Shublik indicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 64AT7505B from unit 3 above. Sample 64AT7505B from unit 3 above. Poorly exposed unit consists of deformed madatone with thin somes of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing wacks. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by a mud alump when seen in 1964. This sequence is somewhat similar to that at locality ll. Sample 64APa215 from organic-rich shale. Outcrops show steeply-dipping contorted varicolored chert. A bed of oil shale 1 ft thick projects through talus near the middle of the bank, and apparently is within a zone of shale about 50 ft thick. These rocks have been considered part of the Tiglukpuk Formation. (Patton and Tailleur, 1964, p. 439-440)	6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter surface and fresh fractures are moverately lustrous with black. 6AAPa208Shale or impure : momenter coal, black. 6AAPa208Shale or impure : momenter coal, black.	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not-seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr305COrganic matter similar to that in 64ATr305COrganic matter similar to that in carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamins and grains that distort bedding of organic material. Pish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the P2On in the chemical analysis (table 5). Barite also occurs as isolated crystals in the shale. Contains about 25 percent day by X-ray analysis but clay not evident in thin section. 64APa215Do this section available. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 60 percent illite. 64APa206Consists of highly layered opaque black organic matter with scattered angular quartr grains. Be fibrous organic material evident. X-ray analysis shows jarosite out it
	25	burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" N., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank at edge of terrace. Chandler Lake Quadrangle, approximately 68°31' N., 150°23' W. Cobblestone	(2) black, wordy-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed Inocornaus shells?) and abundant belemites near middle; (3) platy oil shale, weathered brown, very finely stratified, 5 ft;.(4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod of. Otapiria and Inocornaus lucifor (R. M. Lalay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) pourly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik Formation and it has been included with the Shublik Formation and it has been included association of oil shale with chert and lutitic rocks bearing a fsuna younger (Sarly) Jurassic, R. W. Inlay, written communications, 1964, 1.65) than that of the Shublik indicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 64ATr505B from unit 3 above. Sample 64ATr505B from unit 3 above. Sample 64ATr505B, from 3-ft oil shale zone in unit 2 above. Poorly exposed unit consists of deformed madetone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubhic of highly green-stained concretion-bearing wacks. A block of arenaceous limentone exposed directly to the north in 1946 had been covered by a mod slump when seen in 1964. This sequence is somewhat similar to that at locality 11. Sample 64APa215 from organic-rich shale. Outcrops show steeply-dipping contorted varicolored chert. A bed of oil shale alout 50 ft thick. These rocks have been considered part of the Tiglukpuk Formation (Patton and Tailleur, 1964, p. 139-140) but direct evidence of their position within aid-Cretaceous to post-Triassic stratigraphic inter	ted with half-millimeter layers of organic-rich shale alternating with calcite. 6AAT:2050Shale, black, weathered papery to platy in 1-mm laminae. Weathered besting planes dusted with iron and manganese exides. Contains concretions as large as 15 mm in diameter of calcite and fish bones. 6AAFa215Claystone, shaly, black. Breaks into irregular pieces rather than flakes. In slightly iron stained. 6AAFa208Shale or impure : Monades coal, black. Bedding is apparent on weathered surface and fresh fractures are moneyately lustrous with finely laminated appearance. 6AAFa201D-1Shale, black, flaky. Sample constate of small flakes. black, flaky. Insufficient	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seem in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATT3056. Some of the thin plates contain no carbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamins and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the PgOg in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent clay by X-ray analysis but clay not evident in thin section. 64APa205.—Do thin section available. X-ray analysis but clay not evident in thin section. 64APa206.—Consists of highly layered opaque olack organic matter with scattered angular quartz grains. No fibrous organic material evident. X-ray analysis shows jarosite out it is not evident in thin sections.
	25	burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" N., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank at edge of terrace.	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed Inocersaus shells?) and abundant belemites near middle; (3) platy oil shale, weathered brown, very finely stratified, 3 ft;.(4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelegypod of. Otapiria and Inocersaus lucifor (R. W. Inlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik Formation and it has been recognized previously. However, the apparently undisturbed association of oil shale with chert and lutitic rocks bearing a fauna younger (Early? Jurassic, R. W. Inlay, written communications, 1964, 1.65) than that of the Shublik stratigraphic unit. Sample 64AFr305B from unit 3 above. Sample 64AFr305B, from 3-ft oil shale zone in unit 2 above. Poorly exposed unit consists of deformed midstone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing wacks. A block of areanceous limestone exposed directly to the north in 1964 and been covered by a mod alump when seen in 1964. This sequence is somewhat similar to that at locality 11. Sample 64AFa215 from practic-rich shale. Outcrops show steeply-dipping contorted varicolored chert. A bed of sil shale 1 ft thick projects through talus near the aiddle of the bank, and apparently is within a zone of shule about 50 ft thick. These rocks have been considered part of the Tiglukpuk Formation (Patton and Tailleur, 1964, p. 439-440) but direct evidence of their position within add-Cretaceous to post-Triassic st	ted with half-millimeter layers of organic-rich shale alternating with calcite. 6AAT:2050Shale, black, weathered papery to platy in 1-um laminae. Weathered besting clanes dusted with iron and manganese exides. Contains concretions as large so 15 mm in diameter of calcite and fish bones. 6AAFa215Claystone, shaly, black. Broats into irregular pieces rather than flakes. In slightly iron stained. 6AAFa208Shale or impure : Moandes coal, black. Bedding is apparent on weathered surface and fresh fractures are momentally lustrous with finely luminated appearance.	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by I-ray but not seem in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATT305COrganic matter similar to that in 64ATT305E. Some of the thin plates contain no marbonate, but the few units about 15 mm thick contain both calcite and dolonite in lamins and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolonite and barite surrounding fish bones and phosphatic coprolites account for most of the FgO in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent clay by X-ray analysis but clay not evident in thin section. 64APa2013Eo thin section available. X-ray analysis indicates about 2 percent barite. The clay fraction (55 percent) consists of about 40 percent mixed-layer clay and 60 percent illite. 64APa203Consists of highly layered opaque black organic matter with scattered angular quartz grains. So fibrous organic material evident. X-ray analysis shows jarceite out it is not evident in thin sections.
	25	burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. D132, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank at edge of terrace. Chandler Lake Quadrangle, capproximately 68°31' N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank at edge of terrace.	(2) black, wordy-eppearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prisantic calcite (crushed Inocervans shells?) and shundant belemites near middle; (3) platy oil shale, weathered brown, very finely stratified, 3 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod cf. Otapiria and Inocervans lucifier (R. W. Inlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik at the few places it has been recognized previously. However, the apparently undisturbed association of oil shale with chert and lutitic rocks bearing a fauna younger (Sarly! Jurnasic, R. V. Inlay, written communications, 1964, 1965) than that of the Shublik fadicates a hitherto unrecognized supra-Shublik stratigraphic unit. Sample 64Afri05C, from 3-ft oil shale roce in unit? above. Sample 64Afri05C, from 3-ft oil shale roce in unit? above. Poorly exposed unit cannists of deformed mastone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing wasks. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by a mad along when seen in 1964. This sequence is somewhat similar to that at locality 11. Sample 64Afra? from organic-rich shale. Outcrops show steeply-dipping contorted varicolored chert. Abed of all shale lift thick projects through talus near the middle of the bank, and apparently is within a rone of shale about 50 ft thick. These rocks have been considered part of the Tiglukpuk Formation. (Patton and Tailleur, 1964, p. 439-440) but di	ted with half-millimeter layers of organic-rich shale alternating with calcite. (AATT-305CShale, black, weathered papery to platy in 1-sm laminae. Weathered besing planes dusted with from and manganese exides. Contains concretions as large as 15 mm in diameter of calcite and fish bones. (AATT-305CClaystone, shaly, black. Breats into irregular pieces rather than flakes. In slightly iron stained. (AATT-301D-1Shale or impure : monander coal, black. Bedding is apparent on weathered burface and fresh fractures are movemately lustrous with finely luminated appearance. (AATT-301D-1Shale, black, flaky. Insufficient sample for mil manlysis. Loss > 1/2 time of about 25 percent (table ') s. ests a law oil cortent similar to that of 6AATT-3011-1	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 6AAT-905COrganic matter similar to that in 6AAT-905COrganic matter similar to that in caracteristic politics and dolomite in lamina and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the PaOg in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent clay by X-ray analysis but clay not evident in thin section. 6AAPa203Do this section cralinate. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 60 percent illite. 6AAPa208Consists of highly layered opaque black organic matter with scattered angular quartz grains. So fibrous organic material evident. X-ray analysis shows jarosite out it is not evident in thin sections.
	25	burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" H., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank at edge of terrace. Chandler Lake Quadrangle, compared to the compared terrace.	(2) black, wordy-eppearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with laminae of prismatic calcite (crushed Inoceranus chells?) and abundant belemites near middle; (5) platy oil shale, weathered brown, very finely stratified, 3 ft; (4) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod cf. Otapiria and Inoceranus lucifier (R. W. Inlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Most of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik at the few places it has been recaynized previously. However, the apparently actitured association of oil shale with chert and luttic rocks bearing a fauna younger (Early? Jurnasic, R. W. Islay, written communications, 1964, 1965) than that of the Shublik Indicates a hitherto unrecognized supra-Shublik stratigruphic unit. Sample 64ATr5058 from unit 3 above. Sample 64ATr5058 from unit 3 above. Sample 64ATr5058, from 3-ft oil shale zone in unit 2 above. Poorly exposed unit consists of deformed madstone with thin zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of ruble of highly green-stained concretion-bearing wache. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by a mad alump when seen in 1964. This sequence is somewhat similar to that at locality li. Sample 64AFa215 from organic-rich shale. Outcrops show steeply-dipping contorted varicolored chert. bed of all shale lift thick projects through talus near the middle of the bank, and apparently is within a zone of shule about 50 ft thick. These rocks have been considered part of the Tiglukpuk Formation. (Patton and Teilleur, 1964, p. 439	ted with half-millimeter layers of organic-rich shale alternating with calcite. (AATT-305CShale, black, weathered papery to platy in 1-sm laminae. Weathered besing planes dusted with from and manganese exides. Contains concretions as large as 15 mm in diameter of calcite and fish bones. (AATT-305CClaystone, shaly, black. Breats into irregular pieces rather than flakes. In slightly iron stained. (AATT-301D-1Shale or impure : monander coal, black. Bedding is apparent on weathered burface and fresh fractures are movemately lustrous with finely luminated appearance. (AATT-301D-1Shale, black, flaky. Insufficient sample for mil manlysis. Loss > 1/2 time of about 25 percent (table ') s. ests a law oil cortent similar to that of 6AATT-3011-1	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. GMATT-305COrganic matter similar to that in GMATT-305E. Some of the thin plates contain no carbonate, but the few units about 15 mm thick—contain both calcite and dolomite in lamina and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolomite and barites surrounding fish bones and phosphatic coprolites account for most of the FaOg in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent clay by X-ray analysis but clay not evident in thin section. GMAPA213ED thin section available. X-ray analysis indicates about 2 percent barite. The clay fraction (35 percent) consists of about 40 percent mixed-layer clay and 50 percent illite. GMAPA206Consists of highly layered opaque olack organic matter with scattered angular quartz grains. No fibrous organic material evident. X-ray analysis ghove larceite out it is not evident in thin sections.
	25	burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northwest-flowing stream. (Same locality as assay No. 6, p. Dl32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" M., 153°28' 30" W. Middle Fork of Okpikruck River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank at edge of terrace. Chandler Lake Quadrangle creek. Bank at edge of terrace.	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.5-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with leating of primaric calcite (crushed Inocervans shalls) and abundant belemites near middle; (3) platy oil shale, weathered brown, very finely stratified, 3 ft; (h) organic-rich shale, black, interbedded with black chert and dark-colored cherty calcilutite; contains pelecypod cf. Otapiria and Inocervans lucifor (R. W. Inlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying unite, less than 50 ft; and (6) poorly exposed calcilutite of the Shublik Formation. Nost of this section is lithogenetically like the underlying Shublik Formation and it has been included with the Shublik Formation and it has been included with the Shublik Formation and it has been included with the Shublik Formation and it has been included with the Shublik attailers, and the recognized supranized previously. However, the apparently undivarbed association of oil shale with chert and lutitic rocks bearing a fauna younger (Sarly! Jurussic, R. W. Inlay, written communications, 1964, 1965) than that of the Shublik attailgraphic unit. Sample 6AAT75056 from unit 3 above. Sample 6AAT75056 from unit 3 above. Sample 6AAT75056, from 3-ft oil shale roce in unit 2 above. Sample 6AAT75056, from 3-ft oil shale roce in unit 2 above. Poorly exposed unit consists of deformed madestone with this zones of clay and black organic-rich shale that is iron-stained. Adjacent part of outbank consists of rubble of highly green-stained concretion-bearing wacks. A block of arenaceous limestone exposed directly to the north in 1949 had been covered by n and along them seen in 1966. This sequence is somethat similar to that at the this sequence is somethat similar to that at locality 11. Sample 6AAP2015 from oryadic-rich shale. These rocks have been considered part of the vest. Sample 6AAP2015 from exposed a	ted with half-millimeter layers of organic-rich shale alternating with calcite. (AATT-305CShale, black, weathered papery to platy in 1-sm laminae. Weathered besing planes dusted with from and manganese exides. Contains concretions as large as 15 mm in diameter of calcite and fish bones. (AATT-305CClaystone, shaly, black. Breats into irregular pieces rather than flakes. In slightly iron stained. (AATT-301D-1Shale or impure : monander coal, black. Bedding is apparent on weathered burface and fresh fractures are movemately lustrous with finely luminated appearance. (AATT-301D-1Shale, black, flaky. Insufficient sample for mil manlysis. Loss > 1/2 time of about 25 percent (table ') s. ests a law oil cortent similar to that of 6AATT-3011-1	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64ATr3052Organic matter similar to that in 64ATr3053. Some of the thin plates contain no marbonate, but the few units about 15 mm. thick contain both calcite and dolomite in lamins and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolomite and barite aurrounding fish bones and phosphatic coprolites account for most of the FaOg in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent clay by X-ray analysis but clay not evident in thin section. 64APa208Consists of highly layered opaque olack organic matter with scattered angular quarts grains. So fibrous organic material evident. X-ray analysis shows about 11 percent barite, and the evident in thin sections. 64APa20BConsists of highly layered opaque olack organic matter with scattered angular quarts grains. So fibrous organic material evident. X-ray analysis shows about 1 percent parent of the evident in thin sections. 64APa20B
	25	burne Ridge, 2. 8 mi. east of Hardway Creek; low cutbank on south side of northvest-flowing stream. (Same locality as assay No. 6, p. Di32, Tailleur, 1964.) Killik River Quadrangle, 68°31'30" B., 153°28' 30" W. Middle Fork of Okpikruak River about 0.2 mi. below junction of Okanugun Creek. North part of cutbank at end of craggy spur on east side. Chandler Lake Quadrangle, 68°27'30" N., 150° 55' 30" W. Welcome Creek, 1 mi. below junction of Erratic Creek; east bank at edge of terrace. Chandler Lake Quadrangle east wall where sanyon cuts a series of ridges; exact location undetermined for lack of visibility.	(2) black, woody-appearing organic shale that weathers silvery gray in layers 0.2-0.8 ft thick separated by 0.1-0.3-ft layers of black flinty chert, 15 ft; 3-ft thick zone of platy, calcareous oil shale with leading of primatic calcite (crushed Inocernase shells?) and abundant belemites near middle; (3) platy oil shale, weathered brown, very finely stratified, 5 ft; (8) organic-rich shale, black, interbedded with black chert and dark-colored cherty calciluitie; contains pelecypod of. Otapiria and Inocernase lucifer (R. W. Inlay, written communication, 1964), more than 15 ft thick; (5) poorly exposed interval similar to overlying units, less than 50 ft; and (6) poorly exposed calciluities of the Sublik Furnation. Most of this section is lithogenetically like the underlying Sublik Formation and it has been included with the Sublik Formation and it has been included with the Sublik Formation and it has been included with the Sublik Formation, 1964, 1.65) than that of the Sublik indicates a hitherto unrecognized supra-vitten communications, 1964, 1.65) than that of the Sublik intratigraphic unit. Sample 6AAT7955 from unit 3 above. Sample 6AAT7955, from 3-ft oil shale zone in unit? above. Poorly exposed unit consists of deformed madetone with this zones of clay and black organic-rich shale that is iron-stained. Adjacent part of cutbank consists of rubble of highly green-stained concretion-bearing vache. A block of arenaceous limestone exposed directly to the north in 1969 had been covered by a mad along when seen in 1964. This sequence is somewhat similar to that at locality 11. Sample 6AAP2015 from prophic-rich shale. Outcrops show steeply-dipping contorted varioulored chert. the of 7 li shale of thick. These rocks have been considered part of the Tiglutyuk Formation (Patton and Teileur, 1964, p. 1991, 1840) but direct evidence of their position vithin addition near the siddle of the bank, and apparently is within a zone of shale about 50 ft thick. These rocks have been considered part of the Patters was a p	SAPE215Clayetome, chaly, black. Breaks into fresh pieces rather than flakes. In slightly iron stained. SAPE215Clayetome, chaly, black. Breaks into fish bones. SAPE215Clayetome, chaly, black. Breaks into fish bones. SAPE215Clayetome, chaly, black. Breaks into firegular pieces rather than flakes. In slightly iron stained. SAPE215Chayetome, chaly, black, Breaks into firegular pieces rather than flakes. In slightly iron stained. SAPE215Clayetome, chaly, black, Breaks into fresh fractures are moverately lustrous with finely luminated appearance. SAPE215Chart, black, flaky. Sample consists of small flakes. black, flaky. Lieufficient sample for oil sales, black, flaky. Lieufficient sample for oil sales allows flakes flakes.	calcite grains, alternating with layers and stringers of finely crystalline calcite. The calcite distorts the bedding of the organic fibers. Barite found by X-ray but not seen in thin section. Fragments of fish bones and scales and minute coprolites are fairly abundant. Oil yield reflects dilution with calcite. 64AT-305B. Some of the thin plates contain no marbonate, but the few units about 15 mm thick contain both calcite and dolomite in lamins and grains that distort bedding of organic material. Fish remains abundant, but concretions of dolomite and barite surrounding fish bones and phosphatic coprolites account for most of the PsOg in the chemical analysis (table 3). Barite also occurs as isolated crystals in the shale. Contains about 25 percent clay by X-ray analysis but clay not evident in thin section. 64AFa201B-1No thin section available. X-ray analysis shows about 10 percent illite. 65AFa208Consists of highly layered opaque plack organic matter with scattered angular quartz grains. No fibrous organic material evident. X-ray analysis shows larosite but it is not evident in thin sections. 65AFa201D-1No thin sections available. X-ray analysis shows about 2 percent barite, 5 percent pyrite and a trace of opponents of this contains available. X-ray analysis shows about 2 percent barite, 5

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